WHAT IS CLAIMED IS:

1. A radio access network which supports plural TCP connections across a radio interface with a user equipment unit (UE), the radio access network comprising:

at least one base station node which communicates across the radio interface with the user equipment unit (UE);

a radio network control node (RNC) connected to the base station node for controlling the base station node;

a radio link control (RLC) entity which processes RLC protocol data units obtained from a medium access control (MAC) layer to obtain Internet Protocol (IP) packets for the plural TCP connections, and which uses availability of Internet Protocol (IP) packets for a given TCP connection to control separately for the given TCP connection in-sequence delivery to an Internet Protocol layer of Internet Protocol (IP) packets without regard to availability of Internet Protocol (IP) packets of another of the plural TCP connections.

2. The apparatus of claim 1, wherein, to control in-sequence delivery of the Internet Protocol (IP) packets for the given TCP connection, the radio link control (RLC) entity uses port-specific sequence numbers in the RLC protocol data units which carry the Internet Protocol (IP) packets for the given TCP connection.

3. The apparatus of claim 2, wherein the port-specific sequence numbers are carried in an extension of a length indicator field of a header of the RLC protocol data units.

4. The apparatus of claim 3, wherein a predetermined value in a header extension type field of the header of the RLC protocol data units indicates that the port-specific sequence numbers are carried in an extension of a length indicator field of the header of the RLC protocol data units.

5. The apparatus of claim 2, wherein the radio link control (RLC) entity maintains a differentiated buffering technique for the plural TCP connections, the differentiated buffering technique involving differentiating between Internet Protocol (IP) packets in accordance with TCP port identifiers carried in the Internet Protocol (IP) packets to form TCP-specific subsets of Internet Protocol (IP) packets.

6. The apparatus of claim 5, wherein the differentiated buffering technique involves storing the TCP-specific subsets of Internet Protocol (IP) packets of the plural TCP connections in respective plural buffers.

7. The apparatus of claim 5, wherein within each TCP-specific subset the radio link control (RLC) entity orders the Internet Protocol (IP) packets in accordance with the port-specific sequence numbers carried in the RLC protocol data units.

8. The apparatus of claim 7, wherein for the given TCP connection the radio link control (RLC) entity delivers to the Internet Protocol (IP) layer Internet Protocol (IP) packets belonging to the given TCP connection which become in-sequence upon arrival of a most recent Internet Protocol (IP) packet belonging to the given TCP connection.

9. The apparatus of claim 1, wherein upon obtaining a received Internet Protocol (IP) packet from the Internet Protocol layer for the given TCP connection, the radio link control (RLC) entity updates a port-specific sequence number counter associated with the given TCP connection and includes an updated value of the port-specific sequence number counter along with the received Internet Protocol (IP) packet in a RLC protocol data unit prepared by the radio link control (RLC) entity for transmission to the medium access control (MAC) layer.

10. The apparatus of claim 9, wherein the updated value of the port-specific sequence number counter is carried in an extension of a length indicator field of a header of the RLC protocol data units.

11. The apparatus of claim 10, wherein a predetermined value in a header extension type field of the header of the RLC protocol data units indicates that the updated value of the port-specific sequence number is carried in an extension of a length indicator field of the header of the RLC protocol data units.

12. The apparatus of claim 1, wherein the radio link control (RLC) entity is situated in a node of the radio access network.

13. The apparatus of claim 12, wherein the radio link control (RLC) entity is situated in the radio network control (RNC) node of the radio access network.

14. A radio link control (RLC) entity for use with or in a radio access network and which supports plural TCP connections across a radio interface, the radio link control (RLC) entity processing RLC protocol data units obtained from a medium access control (MAC) layer to obtain Internet Protocol (IP) packets for the plural TCP connections, and using availability of Internet Protocol (IP) packets for a given TCP connection to control separately for the given TCP connection in-sequence delivery to an Internet Protocol layer of Internet Protocol (IP) packets without regard to availability of Internet Protocol (IP) packets of another of the plural TCP connections.

15. The apparatus of claim 14, wherein, to control in-sequence delivery of the Internet Protocol (IP) packets for the given TCP connection, the radio link control (RLC) entity uses port-specific sequence numbers in the RLC protocol data units which carry the Internet Protocol (IP) packets for the given TCP connection.

16. The apparatus of claim 15, wherein the port-specific sequence numbers are carried in an extension of a length indicator field of a header of the RLC protocol data units.

17. The apparatus of claim 16, wherein a predetermined value in a header extension type field of the header of the RLC protocol data units indicates that the port-specific sequence numbers are carried in an extension of a length indicator field of the header of the RLC protocol data units.

18. The apparatus of claim 15, wherein the radio link control (RLC) entity maintains a differentiated buffering technique for the plural TCP connections, the differentiated buffering technique involving differentiating between Internet Protocol (IP) packets in accordance with TCP port identifiers carried in the Internet Protocol (IP) packets to form TCP-specific subsets of Internet Protocol (IP) packets.

19. The apparatus of claim 18, wherein the differentiated buffering technique involves storing the TCP-specific subsets of Internet Protocol (IP) packets of the plural TCP connections in respective plural buffers.

20. The apparatus of claim 18, wherein within each TCP-specific subset the radio link control (RLC) entity orders the Internet Protocol (IP) packets in accordance with the port-specific sequence numbers carried in the RLC protocol data units.

21. The apparatus of claim 20, wherein for the given TCP connection the radio link control (RLC) entity delivers to the Internet Protocol (IP) layer Internet Protocol (IP) packets belonging to the given TCP connection which become in-sequence upon arrival of a most recent Internet Protocol (IP) packet belonging to the given TCP connection.

22. The apparatus of claim 14, wherein upon obtaining a received Internet Protocol (IP) packet from the Internet Protocol layer for the given TCP connection, the radio link control (RLC) entity updates a port-specific sequence number counter associated with the given TCP connection and includes an updated value of the port-specific sequence number counter along with the received Internet Protocol (IP) packet in a RLC protocol data unit prepared by the radio link control (RLC) entity for transmission to the medium access control (MAC) layer.

23. The apparatus of claim 22, wherein the updated value of the port-specific sequence number counter is carried in an extension of a length indicator field of a header of the RLC protocol data units.

24. The apparatus of claim 23, wherein a predetermined value in a header extension type field of the header of the RLC protocol data units indicates that the updated value of the port-specific sequence number is carried in an extension of a length indicator field of the header of the RLC protocol data units.

25. The apparatus of claim 14, wherein the radio link control (RLC) entity is situated in a node of the radio access network.

26. The apparatus of claim 14, wherein the radio link control (RLC) entity is situated in a radio network control (RNC) node of the radio access network.

27. The apparatus of claim 14, wherein the radio link control (RLC) entity is situated in a user equipment unit (UE) which communicates across the radio interface with a node of the radio access network.

28. A user equipment unit (UE) which communicates across a radio interface with a node of a radio access network, the user equipment unit (UE) comprising:

a receiver/transmitter which operates in a physical layer;

a radio link control (RLC) entity which supports plural TCP connections across a radio interface, the radio link control (RLC) entity processing RLC protocol data units obtained from the medium access control (MAC) layer to obtain Internet Protocol (IP) packets for the plural TCP connections, and using availability of Internet Protocol (IP) packets for a given TCP connection to control separately for the given TCP connection in-sequence delivery to an Internet Protocol layer of Internet Protocol (IP) packets without regard to availability of Internet Protocol (IP) packets of another of the plural TCP connections.

29. The apparatus of claim 28, wherein, to control in-sequence delivery of the Internet Protocol (IP) packets for the given TCP connection, the radio link control (RLC) entity uses port-specific sequence numbers in the RLC protocol data units which carry the Internet Protocol (IP) packets for the given TCP connection.

30. The apparatus of claim 29, wherein the port-specific sequence numbers are carried in an extension of a length indicator field of a header of the RLC protocol data units.

31. The apparatus of claim 30, wherein a predetermined value in a header extension type field of the header of the RLC protocol data units indicates that the port-specific sequence numbers are carried in an extension of a length indicator field of the header of the RLC protocol data units.

32. The apparatus of claim 29, wherein the radio link control (RLC) entity maintains a differentiated buffering technique for the plural TCP connections, the differentiated buffering technique involving differentiating between Internet Protocol (IP) packets in accordance with TCP port identifiers carried in the Internet Protocol (IP) packets to form TCP-specific subsets of Internet Protocol (IP) packets.

33. The apparatus of claim 32, wherein the differentiated buffering technique involves storing the TCP-specific subsets of Internet Protocol (IP) packets of the plural TCP connections in respective plural buffers.

34. The apparatus of claim 32, wherein within each TCP-specific subset the radio link control (RLC) entity orders the Internet Protocol (IP) packets in accordance with the port-specific sequence numbers carried in the RLC protocol data units.

35. The apparatus of claim 34, wherein for the given TCP connection the radio link control (RLC) entity delivers to the Internet Protocol (IP) layer Internet Protocol (IP) packets belonging to the given TCP connection which become in-sequence upon arrival of a most recent Internet Protocol (IP) packet belonging to the given TCP connection.

36. The apparatus of claim 28, wherein upon obtaining a received Internet Protocol (IP) packet from the Internet Protocol layer for the given TCP connection, the radio link control (RLC) entity updates a port-specific sequence number counter associated with the given TCP connection and includes an updated value of the port-specific sequence number counter along with the received Internet Protocol (IP) packet in a RLC protocol data unit prepared by the radio link control (RLC) entity for transmission to the medium access control (MAC) layer.

37. The apparatus of claim 36, wherein the updated value of the port-specific sequence number counter is carried in an extension of a length indicator field of a header of the RLC protocol data units.

38. The apparatus of claim 37, wherein a predetermined value in a header extension type field of the header of the RLC protocol data units indicates that the updated value of the port-specific sequence number is carried in an extension of a length indicator field of the header of the RLC protocol data units.

39. A method of handling plural TCP connections existing across a radio interface, the method comprising:

processing RLC protocol data units obtained from a medium access control (MAC) layer to obtain Internet Protocol (IP) packets for the plural TCP connections;

using availability of Internet Protocol (IP) packets for a given TCP connection to control separately for the given TCP connection in-sequence delivery to an Internet Protocol layer of Internet Protocol (IP) packets without regard to availability of Internet Protocol (IP) packets of another of the plural TCP connections.

40. The method of claim 39, wherein, to control in-sequence delivery of the Internet Protocol (IP) packets for the given TCP connection, the method further comprises using port-specific sequence numbers in the RLC protocol data units which carry the Internet Protocol (IP) packets for the given TCP connection.

41. The method of claim 40, wherein the port-specific sequence numbers are carried in an extension of a length indicator field of a header of the RLC protocol data units.

42. The method of claim 41, wherein a predetermined value in a header extension type field of the header of the RLC protocol data units indicates that the port-specific sequence numbers are carried in an extension of a length indicator field of the header of the RLC protocol data units.

43. The method of claim 40, further comprising maintaining a differentiated buffering technique for the plural TCP connections, the differentiated buffering technique involving differentiating between Internet Protocol (IP) packets in accordance with TCP port identifiers carried in the Internet Protocol (IP) packets to form TCP-specific subsets of Internet Protocol (IP) packets.

44. The method of claim 43, wherein the differentiated buffering technique comprises storing the TCP-specific subsets of Internet Protocol (IP) packets of the plural TCP connections in respective plural buffers.

45. The method of claim 43, further comprising ordering within each TCP-specific subset the Internet Protocol (IP) packets in accordance with the port-specific sequence numbers carried in the RLC protocol data units.

46. The method of claim 45, further comprising for the given TCP connection delivering, to the Internet Protocol (IP) layer, Internet Protocol (IP) packets belonging

to the given TCP connection which become in-sequence upon arrival of a most recent Internet Protocol (IP) packet belonging to the given TCP connection.

47. The method of claim 39, wherein upon obtaining a received Internet Protocol (IP) packet from the Internet Protocol layer for the given TCP connection, the method further comprises updating a port-specific sequence number counter associated with the given TCP connection and includes an updated value of the port-specific sequence number counter along with the received Internet Protocol (IP) packet in a RLC protocol data unit prepared by the radio link control (RLC) entity for transmission to the medium access control (MAC) layer.

48. The method of claim 47, further comprising carrying the updated value of the port-specific sequence number counter in an extension of a length indicator field of a header of the RLC protocol data units.

49. The method of claim 48, further comprising using a predetermined value in a header extension type field of the header of the RLC protocol data units to indicate that the updated value of the port-specific sequence number is carried in an extension of a length indicator field of the header of the RLC protocol data units.